

Appl. No. 10/065,991
Response dated 10-01-04**REMARKS**

Claims 1-27 are pending in the application. The office action requested that applicant elect a single disclosed species for prosecution on the merits, and noted that claim 1 was generic. The office action rejected claims 2-9, 13, 16, and 27 under 25 U.S.C. 112, second paragraph. The office action rejected claims 1-9, 13, 16, and 27 under 35 U.S.C. 102(b) as being anticipated by *Balamuth* '947. Claims 2-4, 6, 7, and 13 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Balamuth*. Claim 27 was rejected under 35 U.S.C. 103(a) as being unpatentable over *Balamuth* in view of *Andersson et al.* Claims 5, 8, 9, and 16 were noted as allowable if rewritten to overcome the rejections under 35 U.S.C. 112. The cited references have been reviewed, and applicant requests that the following arguments be considered in traversing these rejections. Further examination of the application and reconsideration of the rejections are respectfully requested.

Election Requirement

Applicant provisionally elects to prosecute the invention of Species 1, claims 1-9, 13, 16, and 27, with traverse.

Applicant respectfully requests reconsideration of the restriction/election requirement. By the arguments presented below, applicant believes that generic claim 1 is allowable and respectfully requests that the non-elected claims be rejoined for further prosecution on the merits.

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§ 112 Rejections

Applicant respectfully traverses the 112 rejections and believes that the allegedly indefinite terms are adequately defined in the specification so that one skilled in the art can readily ascertain the scope of the claims. The office action rejected claim 2 as indefinite as it was allegedly unclear what was meant by “an efficiency rating less than 50 percent.” Efficiency rating is defined at paragraph [0009] of the specification as the percent of the electrical power input at the peak resonant frequency that is converted to mechanical oscillatory power.

The office action rejected claim 27 as indefinite as it was allegedly unclear what was meant by “tip having a power range.” Applicant directs the examiner to paragraph [0003] of the disclosure where the power range is defined as the range of power input from the threshold to the point just before the power input becomes excessive.

Paragraph [0030] of the specification states the magnetostrictive element 14 is efficiency modulated so that the conversion of electrical to mechanical energy is less efficient than in conventional handpieces. And, the power range of a particular tip 18 is matched with the efficiency modulation of the magnetostrictive element 14 so that the tip 18 is not overpowered at the maximum power output setting of the control unit. This allows the operator to use the full range of power adjustment without overstressing or otherwise overpowering the tip 18.

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Thus, the efficiency of the magnetostrictive elements is matched with a tip to maintain the tip within its power range, i.e. between the threshold power needed to begin vibration and the power which is excessive and can damage the tip. This allows full range control of the generator to be used regardless of the tip thickness and/or shape (paragraph [0006]).

Applicant believes that the specification and claims, as written, clearly defines and claims the invention, and withdrawal of the rejections under 35 U.S.C. 112 is respectfully requested.

§ 102 and § 103 Rejections under *Balamuth*

By way of background, applicant's invention is directed to power modulation of an ultrasonic dental device to avoid overpowering the sensitive tips used in the handpiece. The office action appears to have confused frequency and amplitude or power. The current supplied to the handpiece is an alternating current. The frequency of the current must match the resonant frequency of the handpiece, magnetostrictive element, transducer and tip. If the frequency of the current to the handpiece is not close to the resonant frequency, there will be no vibration or oscillatory motion. When the current is supplied at the resonant frequency, the amplitude of the alternating current will determine the power that is supplied to the handpiece and converted to oscillatory vibration, i.e. more power or amplitude will result in more oscillatory motion. If this power or amplitude is too

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great, a sensitive tip can break. Applicant's invention is directed to modulating the power to prevent tip breakage, but generally does not change the operating or resonant frequency. See the specification at paragraphs [0002 – 0004] and [0006].

Claim 1 was rejected under 35 U.S.C. 102(b) as being anticipated by *Balamuth*. In the passage cited in the office action, *Balamuth* discloses that to operate most efficiently, a magnetostrictive element 71, an associated acoustic element 70, and an applicator means 16 should together be resonant with the frequency at the applied electric current (column 8, lines 69-72). *Balamuth* does not teach that the magnetostrictive element is matched with the power sensitivity of the tip, as applicant does. Rather, *Balamuth* discloses that one should match the resonant frequency of the components so as to operate at peak efficiency. In direct contrast, applicant desires to operate at the resonant frequency but with less efficient power conversion so as to allow use of the full range of the power control without damaging a power-sensitive tip.

Thus, it is submitted that *Balamuth* does not disclose or teach a power sensitive tip. Nor does the reference disclose an efficiency-modulated magnetostrictive element, nor that the efficiency modulation is matched with the sensitivity of the tip. *Balamuth* fails to teach or suggest the subject matter of claim 1.

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With regard to claims 2-4, 6, 7 and 13, *Balamuth* does not show the element having an efficiency rating less than 50 percent. *Balamuth* discloses only the desire to operate at the optimal efficiency rating (see column 8, lines 64-75; column 9, lines 59-63; column 9, lines 72-75). *Balamuth* states that it is important to limit the amount of ultrasonic vibrational energy so that an over zealous user may not wear away the surface or damage the gum structure, accomplished by using components designed to be of self-limiting vibrational energy transmitters (column 6, lines 57-66). *Balamuth* does not disclose less than optimal energy conversion; however, the size of the generator may be limited to as small as 1 to 10 watts in the ultrasonic motor (column 8, lines 28-29), which appears to be the method by which *Balamuth* limits the amount of ultrasonic vibrational energy. In contrast to *Balamuth*, applicant's invention can limit the efficiency of energy conversion so as to protect a power-sensitive tip that would otherwise be damaged when used with a controller having a variable power output where the maximum power setting exceeds the power range of the power-sensitive tip.

§ 103 Rejection under *Balamuth* in view of *Andersson*

Referring to claim 27, a rejection under 35 U.S.C. §103(a) is not proper as each element of the rejected claim does not appear within the proposed combination of *Balamuth* and *Andersson*, nor do the references suggest the invention. *Andersson* discloses a method for adjusting the power to an ultrasonic dental insert by use of a

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control switch, where the power control switch has a maximum power setting. Applicant also utilizes an adjustable power supply having a maximum power setting. However, applicant matches the efficiency of the magnetostrictive element with the power-sensitive tip so as to allow a user to apply the full range of power available without fear of damaging a power-sensitive tip that would otherwise be damaged at full power and full efficiency. The apparatus of *Andersson* allows one to adjust the power control to full power, but does not disclose any measures that can be used to protect power-sensitive tips, as claimed by applicant.

For the reasons set forth above, it is respectfully submitted that *Balamuth* and *Andersson*, alone or in combination, do not anticipate, teach, suggest or render the claimed invention of the present application obvious. Therefore, withdrawal of the claim rejections under 35 U.S.C. 102(b) and 103(a) over these references is respectfully requested.

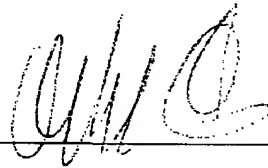
During the course of these remarks, Applicant has at times referred to particular limitations of the claims which are not shown in the applied prior art. This short-hand approach to discussing the claims should not be construed to mean that the other claimed limitations are not part of the claimed invention. Consequently, when interpreting the claims, each of the claims should be construed as a whole, and patentability determined in light of this required claim construction. Unless Applicant has specifically stated that an amendment was

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made to distinguish the prior art, it was the intent of the amendment to further clarify and better define the claimed invention.

If the Examiner has any questions or comments regarding this communication, he is invited to contact the undersigned directly to expedite the resolution of this application. Further examination of the application and reconsideration of the claims as originally presented and the allowance thereof is respectfully requested.

Respectfully submitted,



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